

## *Woody Debris Management and Cleanup*

Natural disasters such as hurricanes, tornadoes, floods, earthquakes, and fire can cause an incredible destruction and generate enormous amounts of debris waste such as limbs, brush, trees, and stumps. Debris waste left after major disasters can create public health and safety problems if not properly managed in a timely manner. Following a disaster, citizens and communities will face the dilemma of how to manage large amounts of debris waste utilizing existing recycling, composting, combustion, and disposal capabilities. It is unlikely that relying on only one waste management option will be successful in meeting the debris waste management need. Most permitted solid waste management facilities will experience significant increases in waste intake rates during cleanup efforts so their normal capabilities may be unable to accommodate all the debris waste.

Local emergency planners and response agencies are encouraged pre-plan for debris management, establishing viable wood waste outlets and end-users that can be immediately activated to meet recovery needs. It is recommended that a local debris management plan be created as part of pre-planning efforts. A customized debris management plan should address the unique characteristics of a locality (or group of localities) and focus on how to collect, segregate, process, reuse, recycle, compost, and dispose of debris waste. A good debris management plan will include a tiered approach, employing options that will divert disaster debris from disposal facilities so as to preserve limited available landfill space for the most difficult and harmful wastes encountered during disaster cleanup. Effective segregation of useable wood from debris waste will allow for recovery of valuable wood resources while reducing the burden on existing solid waste management systems overwhelmed with non-debris waste streams. Also, a good plan will include an effective public education program to be put into place prior to and after a disaster. This critical component will discuss how the community will advise its citizens, businesses, and contractors to manage their debris waste and what staging locations are available to accumulate, store, separate, and/or process their debris waste.

EPA's "[Planning for Disaster Debris](#)" is designed for local officials and emergency planners responsible for debris removal and solid waste management issues following natural disasters. It details information regarding common disaster wastes such as debris waste and includes information and lessons learned from past natural disasters. This guidance is currently under revision, an updated document should be available early 2008. Also, FEMA's "[Debris Management Guide](#)" may be consulted for a sample debris management plan and example local debris management plan strategy (see Appendix A). Further, EPA maintains useful information regarding debris cleanups for [municipal solid waste](#) along with [construction/demolition debris wastes](#). In addition, [DEQ](#) provides technical support to citizens, businesses, local and State agencies during pre-planning activities and disaster recovery operations. DEQ does not provide waste removal or disposal services. Contact your local [DEQ Regional Office](#) for assistance or if you have questions.

During pre-planning, waste management concepts and implementation strategies should be fully discussed in a way that identifies specific challenges and service gaps which may be encountered during preparatory activities and recovery operations. Several focused discussions may be needed to develop strategies to overcome any challenges identified. Primary needs such as communication, coordination between response and recovery units, training, field support, collection, segregation, transportation, staging areas, and available outlets and end-users of debris wastes should be thoroughly discussed. Also, expansion of normal, existing capabilities should be addressed such as the need for increased manpower, equipment, sub-contracting capabilities, and enhanced operating hours for receiving sites and facilities. A good debris management plan will include the issue of scalability so as to address worst case scenarios.

Specific issues that must be discussed when pre-planning for successful debris management include:

- Infrastructure and resources to collect and transport material from affected area(s);
- Segregation of recoverable materials for use/reuse;
- Contamination by foreign material(s) that may limit end-uses;
- Specifications and capabilities of the specific end-user(s) and outlets available;
- Incidental storage and timely processing of debris prior to transport to end-users; and
- Availability of end-user(s) and outlets with capacity to accept material directly or after processing.

Working through these issues cooperatively will strengthen the relationship between localities, service providers, and viable outlets/end-users. A clear understanding of expectations by each responsible party will ensure an effective recovery is undertaken quickly.

During pre-planning activities, local emergency planners and responders are encouraged to make contacts and establish working relationships with multiple local and regional companies/industries that can assist with debris removal and use/reuse. This should be an on-going and recurring process. It is important to understand end-user capabilities and accommodate their needs, both individually and collectively. Multiple outlets and end-users will likely be needed to manage large amounts of debris waste. Industry or company representatives may be willing to assist with pre-planning, training, or support during disaster recovery operation when they are ensured adequate compensation or access to good quality, useable material in exchange for reasonable participation in recovery efforts.

Availability of wood waste end-users and outlets will vary depending on the type, size, and quality of debris and wood wastes involved. **Potential outlets or end-users** of wood wastes in Virginia may include Chip or Sawmills; Veneer or Panel makers; Pulp and Paper mills; Mulch manufactures; Wood pellet mills; Engineered wood products companies, and Pallet makers. Increased interest in several biomass energy options may offer unique opportunities. These include biomass energy producers, any users of biomass boilers, and biomass fuel exporters. Additional outlets or end-users may be available outside Virginia or the US.

Pre-negotiation of contracts with responsible end-users and outlets is recommended so cleanup can begin immediately after a disaster. Pre-negotiated contracts may also help secure a lower price than may be available immediately following a disaster, when high-demand increases normal prices. The Virginia Department of Forestry's [Primary Forest Products Directory 2001](#) is a comprehensive directory identifying companies operating in Virginia's Wood Using Industries. This directory provides company listings by County. It also includes useful reverse directories such as Firm Index; Industry (SIC TYPE) Index; Products Index; Species Index; and Equipment Index. Listing of a company in this directory does not constitute or imply a recommendation by the Virginia Department of Forestry or the VDEQ. A *Secondary Forest Products Directory* should be available from the Virginia Department of Forestry in the near future and may identify additional wood waste end-users. Industry, state or local government, and DEQ representatives may be aware of other debris management options available in your area.

Source separation at the point of generation and/or at staging areas has proven to be the most effective method to promote reutilization of wood material. Segregation may involve sorting by size, species, or both. Small logs may be taken to pulp and paper mills, chip or wood pellet mills, engineered wood products companies, biomass energy producers, any users of biomass boilers, and biomass fuel exporters. Larger logs are generally more acceptable for sawmills, veneer or panel makers, wood pallet mills, specialty wood companies, and engineered wood products companies. Valuable species used for furniture, veneers, etc may carry a premium for certain industries regardless of dimensions.

Wood of all sizes may be processed for firewood or chipped/ground and used for energy recovery as boiler fuel. Small branches and leaves may be chipped or ground by mulch manufactures and used as mulch, animal bedding, or for erosion control. Vegetative yard wastes such as leave, twigs, branches, etc. may be composted at the home or taken to a yard waste composting facility as an alternate management option.

When viable debris waste use/reuse outlets and end-user are unavailable or can not effectively manage all debris waste, emergency sites and existing permitted landfills (e.g., Sanitary, CDD) should be utilized. Emergency permitted debris sites may be established to accept only vegetative wastes or debris/wood waste. DEQ encourages pre-selection and approval of [emergency permitted sites](#). Contact your local [DEQ Regional Office](#) for assistance with obtaining an emergency permit or if you have questions. When using landfills for debris disposal, their use should be limited to unrecoverable or off-specification debris waste. This will allow the landfill(s) to focus their available resources on managing the large amounts of non-debris wastes generated from the cleanup.

Regardless of the debris management options are employed, localities and emergency responders are still required to meet all regulatory and permit requirements, or obtain temporary authorizations (and modifications of their permits) as approved by the Department. Solid waste emergency permits are required for open burning activities. Except for certain circumstances, temporary debris storage sites also require a solid waste emergency permit. Contact your local [DEQ Regional Office](#) if you have questions.